

**REMARKS**

Applicant's Agent thanks Examiner Desai and S.P.E. Morris for the opportunity to discuss the outstanding rejection in a telephone interview on October 5, 2006. No agreement was reached, but Examiner Desai and S.P.E. Morris agreed to further consider the the arguments and amendments presented with this Response. If the Examiner finds this Response in any way inconsistent with the interview, he is invited to contact Applicant's Agent to discuss any issues raised.

Claims 1 to 4 and 6 to 34 are pending. Claim 5 has been canceled. No claims have been added. No claims have been withdrawn from consideration. Claims 1, 2, 4, 10 and 24 are amended. Basis for the amendment to claim 1 may be found on page 3, lines 31-32. Basis for the amendment to claim 2 may be found on page 5, line 31 to page 6, line 1. Basis for the amendment to claim 4 may be found in original claim 5. Basis for the amendment to claim 10 may be found on page 8, lines 11 to 19.

**§ 112 Rejections**

Claims 13 and 14 stand rejected under 35 USC § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. The Office Action states that "the Applicant should further define the structure of the core that is critical or essential to the practice of the invention".

The rejection is traversed. Claim 13 refers to the multilayer article of claim 6 comprising the security substrate of claim 1, a thermoplastic film layer, and "at least one core embedded in the thermoplastic film layer". Applicants have described the constructions from page 30, line 28 to page 31, line 26, further described in Examples 7 and 8, and illustrated in Figures 3 and 4. Briefly, each "core" element is a discreet polymer filament embedded in the thermoplastic film layer, which may be detected visually or electronically through the foam layer. In some described embodiments, "the core may comprise a thermoplastic polymer that is inherently colored, fluorescent, phosphorescent, color-shifting, or polarizing. For example, the core may comprise polyethylene naphthalate, which fluoresces under UV light". Thus in the later embodiment, the core element may not be detectable by initial casual inspection, but a security substrate

containing the same would reveal the embedded core under UV light as a fluorescent element. Alternately, such core elements may be detected by back-lighting, or in the case of cores comprising "metallic or magnetic particles", by electronic means.

Applicant again assert that the term "core" understood by those skilled in the art and is fully enabled by the instant disclosure. Applicant's Agent further believes that a sample of a security substrate containing a core was presented at the Interview conducted at the P.T.O. on April 18<sup>th</sup>, 2006 and was well understood by those present. Applicants respectfully request the rejection of claims 13 and 14, under 35 USC § 112, second paragraph, be withdrawn.

Claim 10 stand rejected under 35 USC § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. Claim 10 recites "wherein said security element is revealed through a substantially transparent region in said foam layer". The Office Action queries "how the security element is revealed.

The rejection is traversed. As Applicants have described on page 7, lines 7 to 13, the small cell size of the foam leads to increased light scattering thereby rendering the foam layer(s) opaque. Embossing of the foam layer can significantly reduce the light scattering from the foam and foam cell/polymer film interfaces, leading to translucent or substantially transparent areas, i.e. a window which reveals the thermoplastic film layer beneath the foam layer. Applicants have further described an embodiment wherein a dye or colorant is added to a thermoplastic film layer in an embossed foam/film/foam construction. Normally, due to the opacity of the foam layers, the colorant in the film layer is not readily visible. However, on embossing one or both of the foam layers, a translucent or substantially transparent region is created and the colored film is revealed.

Applicants Agent again believes that that a sample of a security substrate containing an embossment was presented at the Interview conducted at the P.T.O. on April 18<sup>th</sup>, 2006 and was well understood by those present. Applicants respectfully request the rejection of claim 10, under 35 USC § 112, second paragraph, be withdrawn. Although Applicants believe no amendment is necessary, claim 10 have been amended to recite the clause "in the thermoplastic film layer" for the purpose of clarity.

**§ 102 Rejections**

Claims 1-4, 6-9, 11, 13, 16-21 and 23-34 stand rejected under 35 USC § 102(a) as being anticipated by, or in the alternative, under 35 USC § 103(g) as being unpatentable over WO 2002/00982 = U.S. 6,468,451 (Perez et al.). The rejection is traversed in part, and avoided in part, by amendments presented herein.

As amended herein, claim 1 now recites security elements which provide “visual or electronic authentication of the security substrate”. In the Interview of October 5<sup>th</sup>, all parties seemed to concur that the reference text does not contemplate such a limitation, as Perez et al. provide no teaching or suggestion that the reference fibrillated article could be used for authentication purposes. Although the reference does suggest printing, at column 14, lines 22 to 26, the recited text is clearly in reference to a fibrillated surface, as the antecedent for the description is “the greater surface area”.

Claim 2 has been amended to recite the definition of “visual security element”, which is neither taught nor suggested by the reference printed, fibrillated surface, as printing *per se* would not “change appearance in a reversible, predictable and reproducible manner by the application of heat or pressure, by variation in the angle of viewing, or by the adjustment of lighting conditions”.

With respect to claim 3, the Office Action asserts the fibers to Perez et al. meet the limitation of a “visual security element”. Applicants disagree, as the microfibers of the reference are randomly oriented (as can be seen in the Figures), they cannot be relied upon to convey any information to the casual observer. In contrast, Applicants contemplate a fiber integral to security substrate that may be visually detected to confer authentication. This is analogous to the colored thread that is currently in U.S. currency.

Claims 4 and 5 are directed to embossments. The Office Action asserts that the cloth-like surface imparted by certain fibrillation process read on Applicant’s tactile security elements. In response, the claims have been limited to visual and electronic security elements, and claim 5 has been cancelled, and claim 4 amended to include the limitations of claim 5. In the Interview of October 5<sup>th</sup>, it was appreciated that embossments may provide both tactile and visual security elements. In the latter case, the embossment may provide a “window” which may reveal a security element otherwise concealed by the opaque foam, or the window *per se* might be used

for authentication. This is illustrated in Figures 1 and 2, which show the security element of Example 3 under reflected and transmitted light respectively. Such security elements cannot be duplicated using a color copier.

Claim 6 recites a multilayer construction having a foam layer and a thermoplastic film layer. Claim 7 recites that the visual or electronic security element is integral to the film layer, while it is integral to the foam layer in claim 8. The Office Action asserts that the release coating described by Perez et al. read on the instant construction. Applicants disagree.

Claim 6 may be distinguished from the reference by the limitations of claim 1, as previously argued, as Perez et al. do not contemplate visual or electronic security elements. At column 16, lines 11 to 13, Perez et al teach that the fibrillated article may be provided with a release coating: i.e. a coating for providing adhesive release from an adhesive tape roll during unwind. The construction is described at reference column 15, lines 48 to 50 as adhesive layer/backing layer/release layer, where the backing is the fibrillated article. The reference provides no teaching that such a construction could be provided with “visual security elements”, integral to the fibrillated foam layer, or the release liner layer. Particularly with regard to claim 7, there is no teaching of printing on the release layer of Perez et al. Further, although the “release liner” of Perez may contain pigments, there is no teaching that such pigments could be used to provide visual authentication. Pigmented release coatings do not contemplate security elements.

Claim 11 recites two security elements, which in registration, provide a visual security element. Applicants have provided a description of the registration of two elements on page 9, lines 16 to 26. One embodiment contemplated would be a security document, such as currency, having a first and second polarizing films (as security elements) having different polarizing axes. The first and second polarizing films are transparent, but by folding the currency so that they are in registration, the area becomes opaque.

In support of the rejection, the Office Action asserts that Perez et al. disclose fibers ‘on top of each other’, which provides the necessary limitations. Applicants disagree. The term “registration” refers to proper alignment or position. The microfibers of Perez et al are randomly oriented, and convey no information that may be used for authentication. However the fibers are position, the resulting article exhibits a random array.

Claim 13 recites a “core” embedded in the thermoplastic polymer layer. Applicants have previously argued, with respect to the rejection under 35 USC § 112, that the term is well described, and would be understood by those skilled in the art.

In support of the rejection, the Examiner asserts that the pigmented release liner of Perez et al. reads on the claimed core elements. Applicant’s disagree, and not that such a construction is not an “embedded” security element, and does not convey any visual information for authentication purposes. The purported construction is nothing more than a colored release liner.

On page 6 of the Office Action, the Examiner states (with reference to claim 14), that “although Perez does not explicitly teach core comprises a colored, phosphorescent, pearlescent or fluorescent polymer, it is known in the art to use fluorescent polymers as pigments as evidenced by US 5,151,516 9column 10, lines 27-31.”

First, Applicant believe that the rejection should properly refer to claim 15, instead of claim 14, and that neither of claims 14 or 15 are listed on page 4, paragraph 11 as being rejected over Perez et al.

Further, claim 15 refers to “cores” which are neither disclosed nor suggested by the reference, as previously argued. Further, if one were to use fluorescent polymers as pigments, as suggested by the secondary reference, such a construction would not result in a core element having a fluorescent pigment therein, but a fluorescent release liner. It is further not apparent, the “polymerizable dye” perylimide monomers of the secondary reference, which are polymerized into polyacrylates and polymethacrylates, would be suitable additives for the release liner of Perez et al., and not deleteriously effect the release properties thereof. To the extent that Perez et al contemplate pigments, dyes are not pigments.

Claim 17 and 18 are directed to embodiments where the cores are provided by an “inclusion coextrusion” process. The Office Action correctly notes these are product-by-process limitations, but gives no patentable weight to the limitation as the instant cores are considered to be equivalent to the release liner of Perez et al.

However, Perez et al. do not teach, suggest or contemplate the instant cores, so the coextrusion process, known and understood by the skilled artisan, should be given patentable

weight. The Examiner is invited again to review Figures 3 and 4, which show a core embedded in a thermoplastic film layer and a foam layer, respectively.

Regarding claim 23, the Office Action notes that Perez is silent about “orientation of the thermoplastic film”, but provides no further discussion, the grounds for rejection, or the analysis required in maintaining the rejection.

Claim 24 recites that the multilayer article has a bending stiffness of at least 40 Newtons. The Office Action states that “it is reasonable to presume that the thermoplastic film layer and the high melt strength foam layer has a bending stiffness of at least 40 Newtons, because the material has a like property”.

Applicants disagree. The Examiner errs in conflating the release liner of Perez et al, with the instant thermoplastic film layer, and further that the release liner of Perez et al would desirably have the same physical properties as the instant multilayer article, such as handling properties. Perez is directed to an adhesive article having a release liner and an adhesive layer. The instant article is directed to a multilayer security substrate that desirable has a bending stiff so as to feel comparable to paper currency (see page 13, lines 20-26. Applicants have described used stiff polymers on page 16, lines 3 to 21. Perez et al. have described useful release liner polymers at column 15, line 57 to column 16, line 9. In comparing Applicant's disclosure with the useful release liners of Perez, it is apparent that the instant stiff polymers do not coincide with the materials of Perez et al. While both contemplate methacrylates, Perez et al is directed to higher methacrylates (such as stearyl methacrylate), while the instant stiff polymers may include homo- and copolymers of methyl methacrylate.

It is not apparent form the text of the Office Action whether the Examiner is considering the bending stiffness limitation as a function of the foam layer, the thermoplastic film layer, or the multilayer article. Claim 24 is amended to add the clarifying language that it is the multilayer article that has the requisite bending stiffness.

Claim 30 recites that the security element is on the surface of the foam layer. As previously argued, Perez et al. is limited to printing on a fibrillated surface, and printing on the foam surface *per se* is not taught or suggested.

Claim 31 recites that the security element is dispersed in the foam layer. Again, the Examiner needlessly conflates the random microfibers of the references, which provide no visual

information, with the visual or electronic security elements, which may be used to authenticate documents.

Claim 32 recites that the security element is laminated to the substrate. Applicants contemplate many embodiments where a separate element, such as a holographic film, or an RFID tag is laminated to the article for authentication purposes. Perez et al. contemplate only two additional layers, adhesive and release liners, neither of which are security elements. Further, each the adhesive layer and the release liner are described as "coatings" rather than laminations.

The rejection of claims 1-4, 6-9, 11, 13, 16-21 and 23-34 35 under USC § 102(a) as being anticipated by, or in the alternative, under 35 USC § 103(a) as being unpatentable over WO 2002/00982 = U.S. 6,468,451 (Perez et al.) has been overcome and should be withdrawn.

#### **§ 103 Rejections**

Claim 22 stands rejected under 35 USC § 103(a) as being unpatentable over WO 2002/00982 = U.S. 6,468,451 (Perez et al.). in view of U.S. 5,807,632 (Pedginski et al.) The rejection is traversed.

Pedginski et al is directed to a release coating, and articles prepared therefrom, the release coating described at column 6, line 15 to column 9, line 18. As taught in reference column 1, lines 16 to 18. "[t]he purpose of the release coating is to provide a surface to which the adhesive coating does not permanently adhere." Pedginski et al. do not correct the deficiencies of Perez et al., as the graft copolymers of Pedginski et al. do not constitute visual or electronic security elements.

The rejection of claims 22 under 35 USC § 103(a) as being unpatentable over WO 2002/00982 = U.S. 6,468,451 (Perez et al.) in view of U.S. 5,807,632 (Pedginski et al.) has been overcome and should be withdrawn.

Claims 1, 6, 11 and 12 stand rejected under 35 USC § 103(a) as being unpatentable over WO 2002/00982 = U.S. 6,468,451 (Perez et al.) in view of U.S. 6,497,946 (Kreitman et al.). The rejections are traversed.

Kreitman et al is directed to a diffuse reflector articles comprising a microporous film, which is prepared by a thermally induced phase separation process. Such microporous films have a fundamentally different morphology than the closed cell foams of Perez et al., in that microporous films are characterized by the porosity.

Kretman et al. do not correct the deficiencies of Perez et al, as neither teaches or suggest a security element. Although Kretman et al. contemplate polarizing films, they are used in a different construction than the instant multilayer articles. With reference to Kretman Figure 9A, the polarizing film 11 is sandwiched between the LCD array 13, and the brightness enhancing film 10. While Kretman and Perez may be combined, the combination would yield a diffuse reflective article, suitable for use in a LCD display, not a security substrate.

The rejection of claims 1, 6, 11 and 12 under 35 USC § 103(a) as being unpatentable over WO 2002/00982 = U.S. 6,468,451 (Perez et al.) in view of U.S. 6,497,946 (Kretman et al.) has been overcome and should be withdrawn.

Claim 19 stands rejected under 35 USC § 103(a) as being unpatentable over U.S. 6,468,451 (Perez et al.) in view of U.S. 5,605,729 (Mody et al.). The rejection is traversed.

Claim 19 is directed to the construction of two foam layers and a thermoplastic film layer disposed therebetween. The Office Action admits that Perez et al. do not teach such a construction, but refer to Mody et al to remedy the defect.

Mody et al. is directed to a storage dispensing assembly for loop fastener material used in hook-and-loop fasteners. The Examiner refers to the construction of Figure 1 which purportedly shows the construction of two foam backing layers 16 and a loop layer 14 disposed therebetween.

Mody et al. do not correct the defects of Perez et al. Applicants again assert that the instant article is directed to substrate having security elements, not contemplated by either of the references.. The Office Action apparently acknowledges the distinction in noting that the article of Perez et al is useful in hook and loop fastener applications – as result of the fibrous morphology. That Perez et al and Mody et al. both contemplate hook and loop fasteners is irrelevant to the instant claims.

The rejection of claim 19 under 35 USC § 103(a) as being unpatentable over U.S. 6,468,451 (Perez et al.) in view of U.S. 5,605,729 (Mody et al.) has been overcome and should be withdrawn.

In view of the above, it is submitted that the application is in condition for allowance. Reconsideration of the application is requested. Allowance of claims 1 to 4 and 6 to 34, as amended, at an early date is solicited.

Respectfully submitted,

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